

IN THE CLAIMS:

Amend the claims as follows.

Claims 1-76. (Canceled)

77. (New) Method for fixing a sunscreen or shine agent on hair keratin fibres comprising the steps of reducing the disulphide bonds of the hair keratin with an aqueous reducing agent solution consisting of (1) phosphines or a salt thereof and a mineral or organic acid, wherein the pH of the (1) phosphines solution is in the range 2 to 10 or (2) thiols, wherein the pH of the thiols solution is in the range 6.5 to 9 by using a polyquaternary ammonium hydroxide, said reducing agent generating reactive sites only on the surface of said keratin fibres to a depth of less than 10 μm and of covalently fixing on said reactive sites at least one sunscreen or shine agent said sunscreen or shine agent containing at least one reactive function being capable of reacting with said reactive sites formed on the surface of the keratin fibres.

78. (New) Method according to Claim 77, wherein in a first step, the disulphide bonds of the keratin are reduced and then in a second step, after optional rinsing with water the sunscreen or shine agent is fixed.

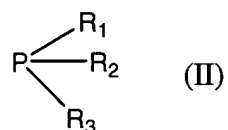
79. (New) Method according to Claim 77, wherein the reduction of the disulphide bonds of the keratin is carried out simultaneously with fixing of the sunscreen or shine agent.

80. (New) Method according to Claim 77, wherein the reduction of the disulphide bonds is carried out to a depth of about 4 to 5 μm .

81. (New) Method according to Claim 77, wherein the reduction is carried out to generate 0.1% to 5% by weight of cystine with respect to the total amino acids of the keratinous hair fibres.

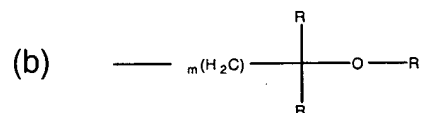
82. (New) Method according to Claim 81, wherein reduction is carried out in order to generate 0.1% to 2% by weight of cysteine with respect to the total amino acids of the keratinous hair-fibres.

83. (New) Method according to claim 77, wherein the phosphines are of the formula:



R_1 , R_2 and R_3 , which are identical represent:

(a) $-(\text{CH}_2)_n-\text{CH}_3$



(c) $-(\text{CH}_2)_n-\text{COOR}$

(d) $-(\text{CH}_2)_n\text{-CONRR}'$ and

(e) $-(\text{CH}_2)_n\text{-NRR}'$

$n = 1$ to 3

$m = 0$ or 1 to 3

R and R', which may be identical or different, represent a hydrogen atom or a linear or branched C₁-C₄ alkyl radical and salts of said compounds with formula (II) with a mineral or organic acid.

84. (New) Method according to Claim 83, wherein the phosphine salts with formula (II) are selected from the group consisting of hydrochlorides, hydrobromides, sulphates, citrates, oxalates and acetates.

85. (New) Method according to Claim 83, wherein the phosphines are selected from the group consisting of tris (2-carboxyethyl)phosphine and tris (hydroxymethyl)phosphine.

86. (New) Method according to Claim 83, wherein the phosphines are present in a concentration in the range 10^{-3} M to 1 M.

87. (New) Method according to Claim 77, wherein the pH of the reducing aqueous solution is in the range 3 to 9.

88. (New) Method according to Claim 77, wherein the contact time for the aqueous reducing solution with the keratinous fibres is in the range from about 30 seconds to 1 hour, the temperature being in the range from room temperature to a temperature of less than 60°C.

89. (New) Method according to Claim 77, wherein the sunscreen or shine agent is used in an aqueous solution at a concentration in the range from about $10^{-3}\%$ to 20%, the pH of said solution being in the range from about 2 to 10.

90. (New) Method according to Claim 77, wherein the contact time for the aqueous solution of active colorant is in the range from about 1 minute to 1 hour, the temperature being in the range from room temperature to a temperature of less than 60°C.

91. (New) Method according to claim 87 wherein said pH is in the range of 4 to 7.

92. (New) Method according to claim 77 wherein said sunscreen is selected from the group consisting of a benzylidenecamphor, a para-aminobenzoic acid, an ester of a para-aminobenzoic acid, a cinnamic acid, an ester of a cinnamic acid, a salicylic acid, a dibenzoylmethane, a benzotriazole, a benzimidazole, an anthranilic acid, an ester of an anthranilic acid, an antranilate and a cyanoacrylate; and said shine agent is a silicon-containing polymer.

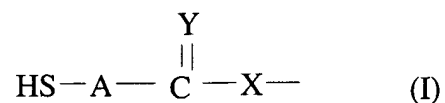
93. (New) A method of treating keratinous hair fibers comprising (i) reducing disulphide bonds of the hair fibers to generate reactive sites only on the surface of the fibers with an aqueous reducing agent solution, said reducing agent solution being selected from the group consisting of (a) an aqueous solution comprising a hydride present at a concentration of 0.01 to 0.5M, said solution having a pH in the range of 7.5 to 9.5, (b) an aqueous solution comprising a hyperbranched polymer or a dendrimer with a terminal thiol functional groups where the thiol titre is in the range of 100 to 5000 meg/l, said solution have a pH in the range of 5 to 11, and (c) an aqueous solution comprising a thiol present at a concentration of 0.05 to 5M, said solution having a pH in the range of from 6.5 to 9, the pH being adjusted with a polyquaternary ammonium hydroxide;

said reducing further comprising contacting said hair fibers with said aqueous reducing agent for 1 to 30 minutes when said reducing agent is said hydride, or for 30 seconds to 1 hour when said reducing agent is said hyperbranched polymer or dendrimer, such that said reducing agent generates reactive sites only on the surface of said keratin fibres to a depth of less than 10 μm ;

said method further comprising covalently fixing at least one colorant, sunscreen, shine agent or hydrophobic compound on said reactive sites formed on the surface of said keratin fibres.

94. (New) The method of claim 93 wherein said hydride is sodium borohydride or potassium borohydride.

95. (New) The method of claim 93 wherein said hyperbranched polymer or dendrimer is a compound of the following formula (I)



wherein: Y is an oxygen atom or NH group;

A is a linear, branched or cyclic, saturated or unsaturated C₁-C₁₂ alkane di-yl group, said alkane di-yl group being optionally interrupted by at least one heteroatom, said alkane di-yl further being optionally substituted by an amino, acylamino, carboxylic acid or ester group; and

X is a nucleophilic group.

96. (New) Method according to Claim 93, wherein in a first step, the disulphide bonds of the keratin are reduced and then in a second step, after optional rinsing with water the at least one colorant, sunscreen, shine agent or hydrophobic compound is covalently fixed on said reactive sites formed on the surface of said keratin fibres.

97. (New) Method according to Claim 93, wherein the reduction of the disulphide bonds of the keratin is carried out simultaneously with fixing of the at least one colorant, sunscreen, shine agent or hydrophobic compound.

98. (New) Method according to Claim 93, wherein the reduction of the disulphide bonds is carried out to a depth of about 4 to 5 μm .

99. (New) Method according to Claim 93, wherein the reduction is carried out to generate 0.1% to 5% by weight of cysteine with respect to the total amino acids of the keratinous hair fibres.

100. (New) Method according to Claim 93, wherein reduction is carried out in order to generate 0.1% to 2% by weight of cysteine with respect to the total amino acids of the keratinous hair fibres.

101. (New) Method according to claim 93 wherein said pH is in the range of 7.5 to 10.5 when said reducing agent is said aqueous solution comprising a hyperbranched polymer or a dendrimer.

102. (New) The method of claim 93 wherein said colorant is selected from the group consisting of CI 61205, CI 20505, CI 61200, CI 17757, CI 18105, CI 18972, Reactive Yellow 135 and CI 18200.

103. (new) The method according to claim 93 wherein the temperature of the aqueous reducing agent solution is in the range of from room temperature to less than 60°C.

104. (new) The method according to claim 93, wherein the temperature of the aqueous reducing agent solution is room temperature.